

REMARKS

Applicants have now had an opportunity to carefully consider the Examiner's comments set forth in the Office Action of February 12, 2004.

All of the Examiner's objections and rejections are traversed.

Reexamination and reconsideration are respectfully requested.

Amendments to the Drawings

The attached three Annotated Sheets of drawings include changes to FIGURE 1, 3 and 8.

Also enclosed with this response is a Submission of Formal Drawings incorporating the drawing changes indicated in the Annotated Sheets. Applicants request that these Replacement Sheets, Figures 1-14 be substituted as formal drawings in the present application.

The Office Action

The disclosure is objected to by the Examiner because of cited informalities. These informalities have been corrected as shown in the amendments to the specification above.

Claims 1, 3, 6-9, 11 and 14-21 remain in this application. Claims 2, 4-5, 10 and 12-13 have been canceled. Claims 22-31 have been added to this application.

Claims 1-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Hansen (U.S. Patent No. 6,509,974).

Comments and Arguments

Claims 2, 4, 5, 10, 12 and 13 have been canceled without prejudice or disclaimer of subject matter therein.

Independent claims 1 and 9 have been amended to further denote the distinction of arranging print production devices and resources into autonomous cells. The autonomous cells are capable of receiving a document processing job or sub-job thereof and processing the job or sub-job from start to finish where a sub-job is understood to be a complete document production, but is less than the total number of document products to be produced. For example, a first autonomous cell might comprise a printer, a collator and a binder, whereas a

second cell might include a scanner, a printer and a shrink wrapper wherein they have devices and resources at least some of which are different from one another. These cells are capable of executing certain document processing jobs and sub-jobs requiring the specific devices or resources found in the individual cells, but are constrained from other jobs or sub-jobs in the sense that, for example, the first cell cannot process a job or sub-job that requires a shrink wrap operation and the second cell cannot process a job or sub-job that requires a binder. Some cells may even have similar devices and resources to produce similar output, but each cell is capable of completing an assigned job using only that cells own devices and resources. Applicants respectfully submit that Hansen (U.S. Patent No. 6,509,974) neither teaches nor fairly suggests grouping print production devices and/or resources into autonomous cells. Rather, Hansen discloses a production printing system that utilizes computer software to receive production printing document jobs and electronically transmit the jobs to the individual output devices.

Claims 6-8 and 14-16 that depend from claims 1 and 9 have been amended to further describe the concept of a two-level scheduling approach for document processing jobs, which while relevant to the autonomous cell system of the present application, would not be relevant to Hansen which does not employ the autonomous cell design. A document processing job is split into sub-jobs according to the workflow which is determined by analyzing the steps that are required to complete the job and the specific inclusion of devices and resources into each cell. The sub-jobs are assigned to a cell capable of processing the entire sub-job autonomously. The sub-jobs are received at the cell and further split into lots that are sent to the cell devices and resources. If the workflow calls for the same process to be performed on the entire sub-job it is still split to provide better utilization of the devices and resources. For example, if a document processing job is to be printed, collated and bound, after a first lot is printed and moves on to the collator a second lot can begin being printed while the first lot is being collated. Applicants respectfully submit that nowhere does the Hansen patent teach or fairly suggest a two-level scheduling process rather Hansen discloses only a normal or single level scheduling process, wherein a document processing job that includes color and black-and-white printing be separated into sub-jobs to be sent to different output devices. Wherein the

Hansen patent may split a production printing job into a color sub-job and a black-and-white sub-job to send to different devices, the present application may still further split the black-and-white sub-job and/or the color sub-job into lots to better utilize the devices and resources of the autonomous cells where Hansen would not.

Further, the present application discloses the use of a pull-type control policy using kanbans as workflow control elements to regulate and direct a document processing job. A number of kanbans are assigned to each sub-job of a document processing job and as the jobs are processed the kanbans are released and are sent back upstream to be reassigned to the next lot or sub-job.

The kanbans are workflow control elements signaling the upstream devices to either send the next available lot or hold the lot until the present lot is finished being processed. The Examiner cites the electronic job tickets of the Hansen patent as anticipating the kanbans of the present invention. Applicants respectfully submit that kanbans differ from electronic job tickets in that they are control elements that flow upstream as well as downstream signaling workflow, whereas the electronic job tickets are created for jobs specifying customer instructions and the tasks necessary for completing the job. The job tickets flow downstream with their assigned job but after the completion of the job are not reused and sent back upstream to call for more work such as kanbans.

Therefore, applicants respectfully submit that amended dependent claims 7, 8, 15 and 16 and new dependent claims 27 and 31 are distinguished over the cited art.

New dependent claims 22-26 and 28-30 further describe the apparatus and methods of independent claims 1 and 9 and are therefore distinguished over the cited art.

CONCLUSION

For the reasons detailed above, it is respectfully submitted all claims remaining in the application (Claims 1, 3, 6-9, 11 and 14-31) are now in condition for allowance. The foregoing comments do not require unnecessary additional search or examination.

In the event the Examiner considers personal contact advantageous to the disposition of this case, he/she is hereby authorized to call Mark S. Svat, at Telephone Number (216) 861-5582.

Respectfully submitted,

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5/11/04
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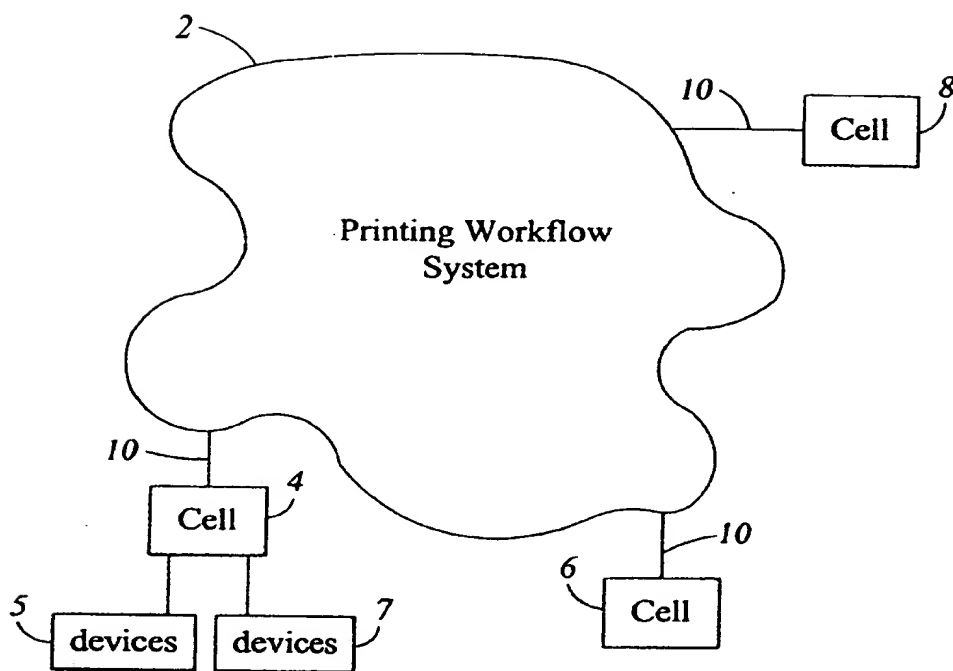


FIG. 1

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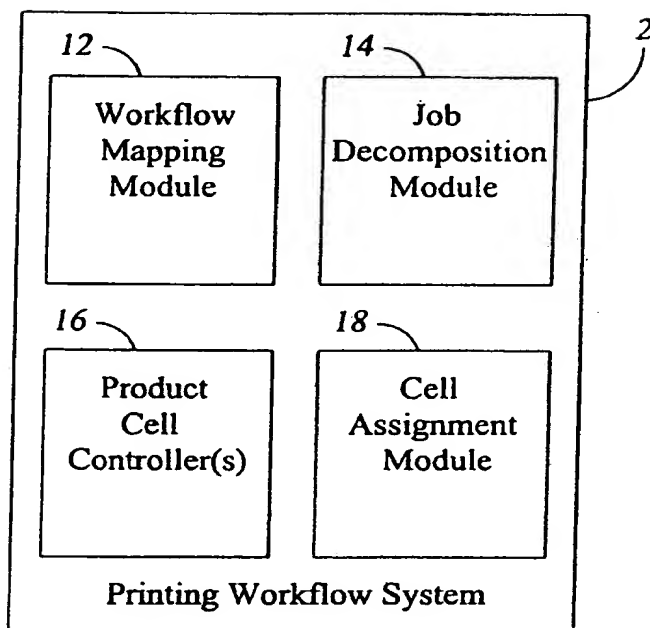


FIG. 2

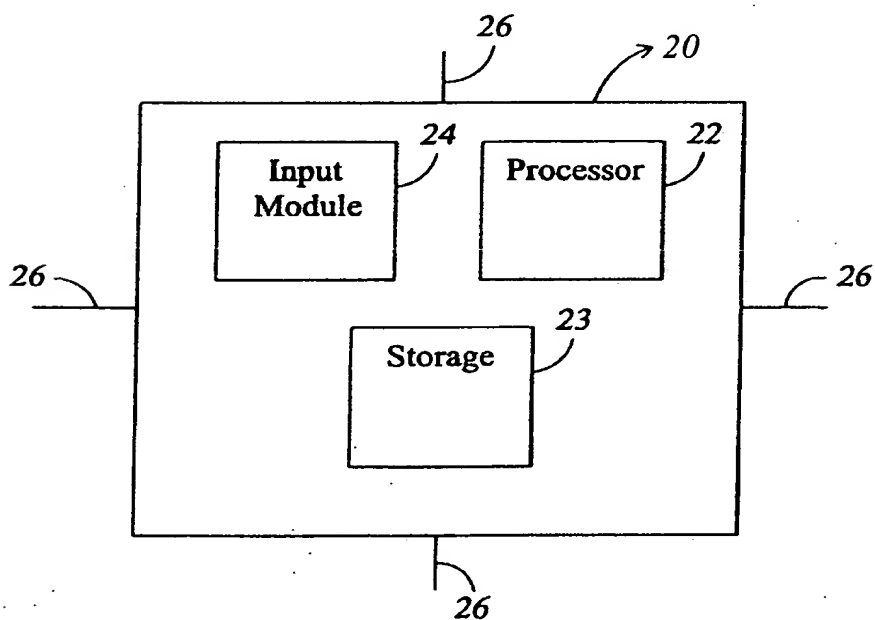


FIG. 3

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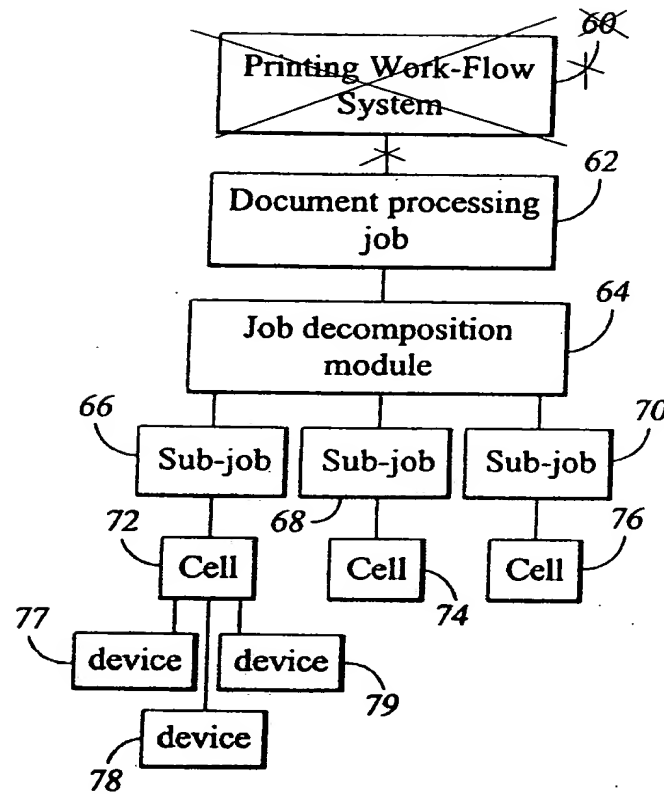


FIG. 8